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| 10/551,000 | 01/06/2006 | Takao Suzuki | CU-4426 RJS | 1406 |
| 26530 | 7590 | 08/15/2007 | | |
| LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604 | | | EXAMINER PICKARD, ALISON K | |
| | | | ART UNIT 3673 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/551,000

Applicant(s)

SUZUKI ET AL.

Examiner

Alison K. Pickard

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 8-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8-11, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '078 in view of Bush (3,893,660).

JP '078 discloses a combined oil ring 4 and coil spring 5 made of shape memory alloy and expands when heated. The spring is made of wire. It is unclear if the spring has a rectangular cross-section. Bush teaches a piston ring with a coil spring expander. Bush teaches forming the expander with a certain shape (Fig. 4), width, and space to ensure the coils do not intermesh and to reduce friction and wear on the ring (see col. 2, lines 16-25). The ratio of the thickness to the width of the cross-section of the wire is at least 1:1 (as measured in Fig. 6 for example). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the coil spring of JP '078 by using the shape and width dimensions taught by Bush to prevent the coils from intermeshing and reduce wear on the oil ring.

3. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa (6,834,861) in view of JP '078.

Takizawa discloses an I-shaped oil ring with a coil expander. The width B of the oil ring in the axial direction is 1.2 to 2.0mm, which is within the claimed range. Takizawa does not

appear to disclose that the coil expander is made shape memory alloy wire. JP '078 teaches an oil ring with coil expander. JP '078 teaches forming the coil expander from shape memory alloy wire to make the bearing pressure depend on the operating temperatures. This allows for a higher pressure at higher temperatures when the coil expands. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to form the coil expander from shape memory alloy wire such that the pressure will vary with the temperature and provide an improved sealing action during higher temperatures.

4. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of JP' 078 as applied to claims 14 and 15 above, and further in view of Bush.

Neither JP '078 nor Takizawa appear to disclose the wire has the claimed thickness to width ratio. Bush teaches a piston ring with a coil spring expander. Bush teaches forming the expander with a certain shape (Fig. 4), width, and space to ensure the coils do not intermesh and to reduce friction and wear on the ring (see col. 2, lines 16-25). The ratio of the thickness to the width of the cross-section of the wire is at least 1:1 (as measured in Fig. 6 for example). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the coil spring by using the shape and width dimensions taught by Bush to prevent the coils from intermeshing and reduce wear on the oil ring.

5. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being obvious over Masuyama in view of Bush.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37

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CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Masuyama discloses an oil ring 11 and coil spring 21 or 22 wherein the spring is made of shape memory alloy and expands when heated. The spring is wire. However, it is unclear if the spring has a rectangular cross-section. Bush teaches a piston ring with a coil spring expander. Bush teaches forming the expander with a certain shape (Fig. 4), width, and space to ensure the coils do not intermesh and to reduce friction and wear on the ring (see col. 2, lines 16-25). The ratio of the thickness to the width of the cross-section of the wire is at least 1:1 (as measured in Fig. 6 for example). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the coil spring using the shape and width dimensions taught by Bush to prevent the coils from intermeshing and reduce wear on the oil ring.

6. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being obvious over Takizawa in view of Masuyama.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Takizawa discloses an I-shaped oil ring with a coil expander. The width B of the oil ring in the axial direction is 1.2 to 2.0mm, which is within the claimed range. Takizawa does not appear to disclose that the coil expander is made shape memory alloy wire. Masuyama teaches an oil ring with an improved coil expander arrangement. Masuyama teaches using a coil expander formed from shape memory alloy wire to make the pressing force depend on the operating temperatures. This allows for a higher pressure at higher temperatures when the coil expands. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the coil expander formed from shape memory alloy wire as taught

by Masuyama such that the pressure will vary with the temperature and provide an improved sealing action during higher temperatures.

7. Claims 16 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Masuyama as applied to claims 14 and 15 above, and further in view of Bush.

Neither Masuyama nor Takizawa appear to disclose the wire has the claimed thickness to width ratio. Bush teaches a piston ring with a coil spring expander. Bush teaches forming the expander with a certain shape (Fig. 4), width, and space to ensure the coils do not intermesh and to reduce friction and wear on the ring (see col. 2, lines 16-25). The ratio of the thickness to the width of the cross-section of the wire is at least 1:1 (as measured in Fig. 6 for example). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the coil spring by using the shape and width dimensions taught by Bush to prevent the coils from intermeshing and reduce wear on the oil ring.

Response to Arguments

8. Applicant's arguments with respect to claims 8-17 have been considered but are moot in view of the new ground(s) of rejection. The 1.132 declaration has been carefully considered as well.

Bush teaches a coil spring with a rectangular cross-section (in that it has the claimed ratio of at least 1:1). Bush teaches this shape as well as the spacing provides reduced wear on the piston ring. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat.


App. & Inter. 1985). Takizawa has been applied to show that it is known to make an I-shaped oil ring with a width within the claimed range.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alison K. Pickard whose telephone number is 571-272-7062. The examiner can normally be reached on M-F (10-7:30), with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tricia Engle can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Alison K. Pickard
Primary Examiner
Art Unit 3673

AP